occur within the period of the signal's highest frequency sinusoid. In these ways, the sampling signal captures the sampled signal's temporal variations in a way that leaves all the original signal's structure intact.

Exercise 5.3.3

What is the simplest bandlimited signal? Using this signal, convince yourself that less than two samples/period will not suffice to specify it. If the sampling rate

$$\frac{1}{T_s}$$

is not high enough, what signal would your resulting undersampled signal become?

5.5 Amplitude Quantization

The Sampling Theorem says that if we sample a bandlimited signal s (t) fast enough, it can be recovered without error from its samples **s (nTs), n ∈{..., −1, 0, 1,... }.** Sampling is only the first phase of acquiring data into a computer: Computational processing further requires that the samples be **quantized**: analog values are converted into digital (Section 1.2.2: Digital Signals) form. In short, we will have performed **analog-to-digital (A/D) conversion**.